

AGRICULTURAL.

Experiments in Fertilizing.

Col. W. D. Mann:

DEAR SIR: A great press of business has prevented an earlier response to your favor of November 23d; and even now I shall be compelled to reply hastily, and consequently with more prolixity and less point than if I had more time at my command. I hope, however, to make myself understood.

Having already furnished you the formula for the preparation in question, the remaining inquiries only claim my attention.

Cotton seed meal forms the basis of the preparation which you have thought proper to call the "Langdon Fertilizer." Before the war I had experimented much with fertilizers, and, without going into details of my experiments, I had then come to the conclusion that a mixture of Peruvian guano and bone dust, in equal proportions, with plaster and salt in smaller proportions—say one-quarter to one-eighth—was the best fertilizer we could use on our Southern lands. With us the results were most satisfactory than Peruvian guano alone or any of the prepared superphosphates. I therefore discarded all others, and for some time before the war cut off our supplies of the ingredients composing this preparation, and then for the first time I tried cotton seed meal—a home product of which the war could not deprive us. I could get nothing else, and was forced to take cotton seed meal or nothing. I had but little idea of what properties it was composed of, or what would be its effect upon the soil. But cotton seed had always been considered valuable as a fertilizer, and the conclusion was, of course, that the ground seed must be good. I applied the meal the first season in various ways—in the hill and drill, planted seed upon it and covered the seed. They refused to germinate. I used it in bedding sweet potatoes, covering the bottom with meal, a covering of soil on the meal, then planted the potatoes. I had one fine crop of "draws," but they never started the second time. On examination, I found the potatoes in the bottom of the bed all rotten—burnt by the meal. My florist tried it on some fine young evergreens in my nursery. He first ran a plow near the row, turning the furrow from the row, leaving the little fibres bare. The meal was then sprinkled liberally in the bottom of the furrow, and again covered with the plow, turning the furrow upon it. Every plant was killed. The meal, in direct contact with the delicate little fibres was too much for them, and I lost several hundred dollars' worth of fine evergreens. I became satisfied, therefore, that the cotton seed meal alone was so strong that it could not, with safety, be applied in a mass directly to the seed or plant, but must be mixed thoroughly with the soil, and should have other ingredients in combination. It was also evident that it contained a large amount of ammonia, and was a fertilizer of very great power. I subsequently used it on various field crops, and also on young trees and plants in my nursery, taking care to mix it thoroughly with the soil, by either plow, fork or spade, and the effect was always good, but not entirely satisfactory. It was an active stimulant, very decided in its effects, but still something seemed to be wanting. Evidently ammonia. It therefore struck me that the same preparation that I had formerly used with such satisfactory results—substituting only cotton seed meal for guano—would make it about. I therefore mixed the meal with pure bone dust in equal proportions—say one pound each of the latter to four pounds each of the former—and the result is the best fertilizer in the world for our Southern lands, in my opinion. I certainly have realized more decided effects from it than from any other fertilizer I have ever used, and I have consequently, zealously and urgently recommended its use to the cultivators of the soil of the South. It is my firm conviction that in proper proportions of the different ingredients, and a thorough manipulation, it is as near perfection as can be obtained.

This conclusion you will perceive, is the result of practical experiments, and this, I take it, is what our planters want. They want a fertilizer that will insure the largest crops at the least expense and with the least labor, and all this I claim for the fertilizer in question. But it will bear the test of the strictest scientific scrutiny.

Analysis has shown that the different ingredients, in combination, furnish the soil with all the elements required for the production of our great staples, cotton and corn, and which enter more or less into the composition of all the crops we grow. Common sense teaches that by returning to the soil the elements that have been drawn from it by the growing crop, will keep up its fertility for all time. Or, in the language of a distinguished scientific writer: "Adopt the principle of making full restitution, in kind for all that the soil parts with by the results

of tillage and the removal of crops, and one's land will improve rather than deteriorate by cultivation." This principle, I claim, is maintained in the fertilizer in question. It is the foundation on which it rests. Cotton seed meal certainly does make "restitution in kind," to a large extent, for what has been taken from the soil in the growth of a crop of cotton; and the conclusion is therefore irresistible that for cotton there cannot be a better fertilizer than cotton seed, with the oil abstracted and ground fine, so as to be immediately available to the use of the plant. But, although nearly one-half of the ash of cotton seed is composed of phosphoric acid, still analysis shows that there is an undue proportion of nitrogen as compared with phosphate, and hence, to supply a due proportion of this most essential of all the properties of cotton, corn, etc., a large addition of bone phosphate is indispensable. The formula therefore, which at your request I furnished you, contains cotton seed meal and soluble bone phosphate in about equal proportions, with, in smaller quantities, gypsum, or land plaster, and common salt, to supply the minor but still important constituents of plant food.

The merits I claim for this preparation are—

1. It contains more fully and completely than any other, the elements necessary for the production of Southern crops and the renovation of Southern soil.

2. Its exceeding simplicity, there being nothing mysterious or complicated about it, and any planter can prepare it at home with his own hands, although as its efficiency can never be complete, or its full benefits be uniform and thorough, it is better, and doubtless cheaper, that the manipulation be done by machinery.

3. It is a home preparation. The principal ingredients—cotton seed and bones—are here at our own doors, and on our own plantations; and the minor articles, plaster and salt, are easily obtained at low prices. Therefore, another important recommendation is,

4. Its cheapness. I am fully convinced that at the price now fixed by you, to wit: \$60 per ton it is much the cheapest fertilizer in our market. Pound for pound, I consider it more valuable than the preparations that are selling at \$75 to \$80. For my own use I would greatly prefer it to Peruvian guano at the same price.

5. Assurance of its purity. This is a most important consideration. The planters of the South have been shamefully imposed upon by adulterated preparations that have proved of no value. Some of them subjected to analysis, have been found to contain 40 to 50 per cent. of sand, and in one instance recently as high as 60 per cent. of sand and other insoluble matter. Of course all preparations are valueless. This is one of the great evils of the times, and should be remedied by legislation, as it is already being done by some of the States of the Union. When we can get a Legislature that we can call our own, I trust it will be done in our own State. Until then, our reliance must be in the character of the manufacturer. In the present case I know there will be no adulteration, and feel no hesitation in guaranteeing its uniform purity. And the fact that it is prepared here, where all the material used, and the whole process of manipulation are open to the inspection of all; where redress can be promptly secured in case any wrong be done, furnish an assurance of protection from fraud, that I trust will inspire our planters with confidence in the uniform purity of the article.

And now a few words on the mode of application and the quantity to be used. One of the principal causes of disappointment in the effect of fertilizers arises from their improper or injudicious application. I insist, as of the very first importance, that they should all ways be thoroughly incorporated with the soil. The common practice of dropping a handful in the bottom of the hill or drill, covering lightly with soil, planting the seed over the fertilizer, and then covering, will never produce satisfactory results. It may do some good in giving the plant a start, but as it grows, and the roots reach out in every direction to gather food for the sustenance of the plant, it must be perceive that they will receive no aid from the heap that was deposited immediately under the seed. The fertilizer will have ceased to be of any benefit, and plant will languish and the crop fail. I repeat then, that the only way a fertilizer should be applied is to mix it thoroughly and as even as possible, throughout the soil, as far as the roots of plants may penetrate. It is not sufficient merely to feed plant while young, but food should be provided and placed within its reach to sustain it throughout all the stages of growth until the crop is matured.

For crops with tap roots and but few laterals, it may do to apply in the hill or drill, but then it should be mixed in the soil by frequent plowings before planting the seed. But for corn and other crops with lateral fibrous roots that extend over the entire surface of the ground, the full value of a fertilizer will never be realized except by a broadcast application, followed by plow until

completely and uniformly incorporated with the soil. When applied in the drill, 200 to 300 pounds to the acre will be sufficient; but if broadcast, not less than 500 should be applied. Indeed, if followed by deep and frequent plowings, to insure a thorough and uniform intermixture throughout the entire mass that has been stirred by the plow, one thousand pounds per acre may be applied, not only with perfect safety, but with decided profit. This is really the only plan by which the full benefits of any fertilizer can be realized.—Mobile Register.

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